## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

**Listing of Claims:**

1. (Currently Amended) A system comprising:

a set of objects encapsulating respective computational models that simulate a manufacturing process, wherein each of the models receives one or more inputs values and computes one or more predicted output values based on the simulation; and

a software program executing within a computer operating environment and having an embedded control module to invoke the computational models in parallel to produce the predicted output values computed by the encapsulated computational models.

2. (Currently Amended) The system of claim 1, further comprising a model aggregator to receive the input values from the control module and to distribute the input values to the objects, wherein at least a portion of the input values correspond to process data measured from the manufacturing process.

3. (Currently Amended) The system of claim 2, wherein each model includes at least one input and at least one output, and further wherein the model aggregator stores configuration data mapping a set of input slots to the inputs of the models to control distribution of the input values to the objects encapsulating the computational models.

4. (Original) The system of claim 3, wherein the configuration data maps a single input slot to multiple inputs of different models.

5. (Currently Amended) The system of claim 2, wherein the model aggregator receives the predicted output values from the objects executing the encapsulated models in parallel, and communicates the predicted output values to the control module.

6. (Currently Amended) The system of claim 5, wherein the control module simultaneously displays the predicted output values from the computational models and integrated within a common user interface.

7. (Original) The system of claim 1, wherein the control module receives input from a user and communicates the inputs to the object models as inputs to the computational models.

8. (Original) The system of claim 1, wherein the software program comprises process management software to manage a manufacturing process.

9. (Currently Amended) The system of claim 8, wherein the control module receives measured process data and communicates the measured process data to the objects ~~models~~ as inputs to the computational models for use in computing the predicted output values.

10. (Currently Amended) The system of claim 2, further comprising a configuration module to select a set of computational models in response to user input, and to direct the model aggregator automatically to create the set of objects to encapsulate the computational models.

11. (Original) The system of claim 10, wherein the configuration module, the control module and the set of objects comprises reusable software components conforming to a software component architecture.

12. (Original) The system of claim 1, wherein the objects comprise reusable model software components arranged as one or more dynamic linked libraries (DLLs) invoked by the control module.

13. (Original) The system of claim 1, further comprising one or more dynamic linked libraries (DLLs) that implement:

the set of objects;

the control module;

a configuration module invoked by the software program to configure the set of objects in response to user input; and

a model aggregator to receive input values and commands from the control module and to distribute the input values and commands to the objects for invoking the computational models.

14. (Currently Amended) A system comprising:

a set of objects having generic interfaces for controlling encapsulated computational models;

process management software executing within a computer operating environment to control a manufacturing process, wherein the process management software includes an embedded control module;

a model aggregator to receive input values and commands from the control module and to distribute the input values and commands to the objects via the generic interfaces,

wherein at least a portion of the input values correspond to process data measured from the manufacturing process,

wherein the control module directs the model aggregator to invoke the computational models in parallel to simulate the manufacturing process and compute predicted output values based on the input values.

15. (Original) The system of claim 14, further comprising configuration data mapping a set of N input slots to M inputs of the models, wherein M is greater than or equal to N.

16. (Currently Amended) The system of claim 14, wherein the control module presents an integrated user interface that simultaneously displays:

(i) the predicted output values received from the model aggregator and generated by the computational models; and

(ii) process data measured from the manufacturing process.

17. (Currently Amended) The system of claim 14, further comprising a configuration module to select the computational models in response to user input, and to direct the model aggregator to automatically create the set of objects to encapsulate the computational models.

18. (Original) The system of claim 17, wherein the configuration module, the control module and the set of objects comprises reusable software components.

19. (Currently Amended) A computer-readable medium comprising instructions causing a processor to:

instantiate a set of objects encapsulating computational models and including generic interfaces for invoking the computational models, wherein each of the models performs a mathematical simulation of a manufacturing process to compute predicted output values based on input values;

instantiate a model aggregator to distribute input values to the objects and to receive predicted output values computed by the computational models encapsulated within ~~from~~ the objects; and

instantiate a control module to receive the output values from the model aggregator and to display the output values.

20. (Original) The computer-readable medium of claim 19, wherein the objects, the model aggregator and the control module comprise reusable components, and further wherein the control module is arranged for embedding within an executable program.

21. (Original) The computer-readable medium of claim 20, wherein the objects, the model aggregator and the control module are arranged as dynamic linked libraries (DLLs).

22. (Original) The computer-readable medium of claim 19, wherein the instructions further comprise a configuration module to select the computational models in response to user input, and to direct the model aggregator to create the objects encapsulating the models.

23. (Original) The computer-readable medium of claim 19, wherein the instructions further comprise an executable software program embedding the control module.

24. (Currently Amended) The computer-readable medium of claim 23, wherein the executable software program comprises process management software to manage ~~a~~ the manufacturing process.

25. (Currently Amended) A method comprising:

encapsulating a ~~set of~~ plurality of different computational models within respective objects, wherein each object provides a generic interface for invoking the encapsulated computational model;

embedding a control module within an executable software program; and

invoking the set of objects from the control module to execute the computational models in parallel to simulate a manufacturing process and compute predicted output values based on the simulation.

26. (Original) The method of claim 25, further comprising:

defining a set of input slots; and

mapping inputs of the encapsulated models to the input slots.

27. (Original) The method of claim 26, further comprising mapping at least two of the inputs of the models to a common input slot.

28. (Original) The method of claim 26, further comprising:
receiving input values from the control module, and
distributing the input values to the objects according to the mapping.

29. (Original) The method of claim 25, further comprising:
selecting the models in response to user input; and
creating one of the objects for each of the selected models.

30. (Original) The method of claim 25, wherein invoking the set of objects comprises:
querying a model aggregator to identify the objects; and
directing the model aggregator to provide input values to and receive predictive output values from the interfaces of the objects.

31. (Currently Amended) The method of claim 25, further comprising:
receiving measured data from a manufacturing process; and
communicating the measured data to the objects for use during model execution in computing the predicted output values.

32. (Original) The method of claim 25, further comprising:
receiving an input value from a user; and
directing the input value to the appropriate objects for use during model execution.

33. (Original) The method of claim 25, further comprising:
receiving predictive output values from the objects; and
presenting the predictive output values to a user.

34. (Currently Amended) The method of claim 33, further comprising presenting the output values simultaneously and integrated within a common user interface.

35. (New) The method of claim 1, wherein the predicted values include one or more of a temperature, a processing time, a speed, a thickness, a flow rate, or a concentration for the manufacturing process.

36. (New) The method of claim 1, wherein the computational models compute the predicted output values by one or more of neural networks, linear regression, partial least squares (PLS), or principal component analysis.

37. (New) The method of claim 1, wherein the predicted output variables are hypothetical adjustments to be made to the manufacturing process.